Recursive Bayesian Track-Before-Detect for Maritime Surveillance by an Airborne Radar

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This talk will present an overview of the progress in collaborative (RMIT-DSTG) research on Track-Before-Detect (TBD) algorithms for maritime surveillance using a scanning airborne radar. The adopted framework for exploration and development of novel techniques is the recursive Bayesian TBD, whose optimal solution is formulated as a Bernoulli TBD filter [1]. This framework was selected as the most favourable option considered in a comparative study of three different TBD techniques, reported in PIRR 2019.

The talk with briefly review the following topics, all in the context of maritime surveillance:

- A comparison of the Bernoulli TBD filter against the conventional Bayesian tracker which exploits the amplitude information [2]
- Methods for exploitation of Doppler information in TBD [3,4]
- Bernoulli TBD filter for multiple interacting targets [5]
- The use of correlation filtering for more efficient particle implementation of Bernoulli TBD [6]
- Bernoulli TBD smoothing: pros and cons [7]

References

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